

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

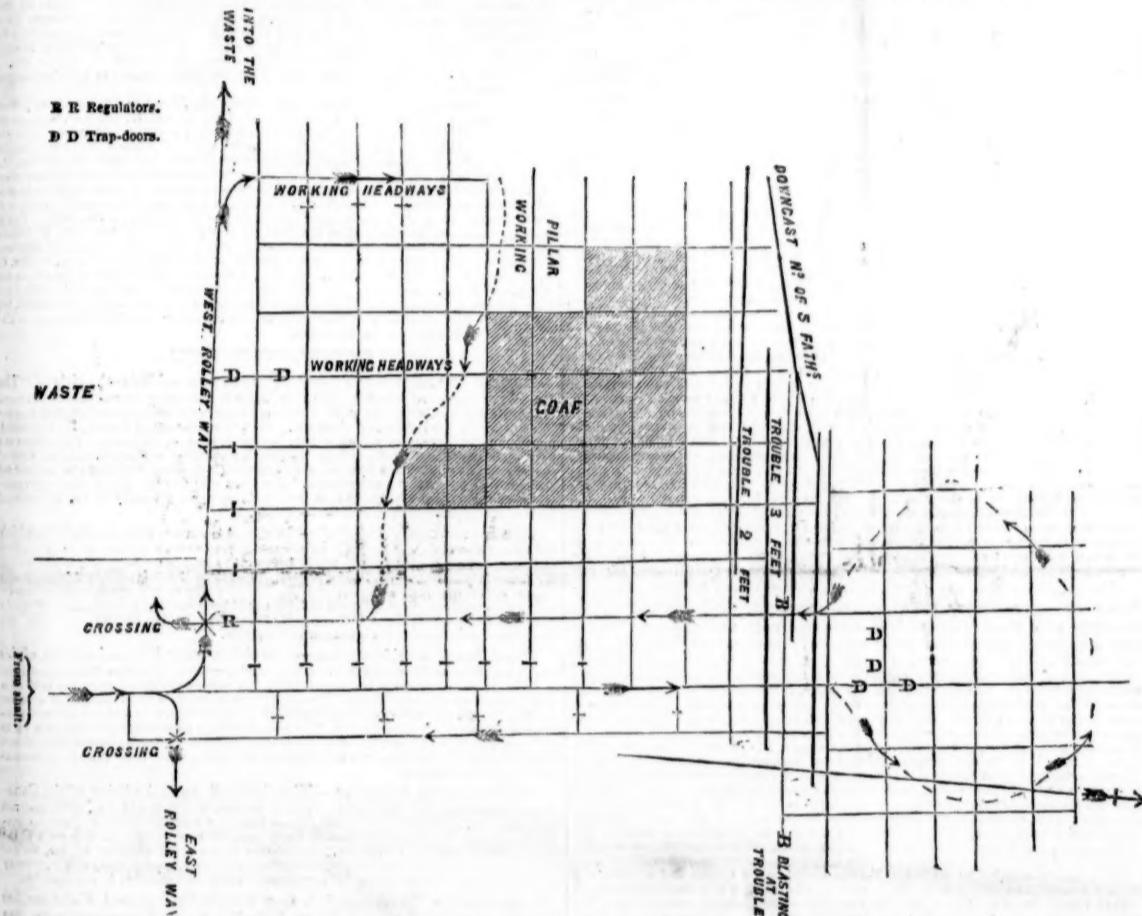
FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1426.—VOL. XXXII.]

LONDON, SATURDAY, DECEMBER 20, 1862.

[WITH JOURNAL] STAMPED.... SIXPENCE.
UNSTAMPED. FIVEPENCE.

THE WALKER COLLIERY—THE LATE EXPLOSION.



The above is a plan of part of the Ann pit workings in the Low Main seam, Walker Colliery, where the explosion took place. The object of the sketch is to render the Notes upon the Walker explosion, by Mr. M. Dunn, published in last week's *Mining Journal*, more readily and completely intelligible. The single lines are the workings; the east and west

places being 4 yards in width, and the north and south places 2 yards wide. There is an upcast dyke running just to the north of the workings shown; it runs rather south of west and north of east. There is a regulator at the end of the west roley way, though not shown in the sketch.

THE EDMUND'S MAIN COLLIERY EXPLOSION.

The inquests upon some of the bodies of those who lost their lives by the explosion at this colliery have commenced.

Benjamin Clegg, the fire-trier, deposed that he went to the pit at midnight on Sunday, Dec. 7, and went down the dip-bords to the face, which was about three-quarters of a mile from the shaft. He got there before 1 o'clock. He found no gas, but two or three feeders in both bord-gates very weak. The face was 9 or 10 yards from the last slit, and the air was conveyed to it by brattice-boards. Each bord-gate was 8 ft. wide, and 6 ft. high. The ventilation was good. The air was just as usual. At that time the bord-gate faces were making about as much gas as usual. The blowers were constant, and there was always gas, more or less, in those faces. At that time he saw nothing which would lead him to apprehend danger from gas. At 1 o'clock, when he left the faces, James Johnson remained behind. Johnson was the shot-firer, and, before he fired the shot, it was his duty to see the faces clear of gas. He had received orders from Mr. Mitchell to be careful. Mr. Lawton was the man from whom he took his orders. He used a Davy lamp, and Johnson had a Stephenson. The six men in the bord-gate faces had between them two Davy and four Stephenson lamps. No naked lights were allowed within 9 or 10 yards of the face, and before Saturday morning nothing but naked candles were used up to the bord-gate face. The appointment of shot-firers was made at the same time as lamps began to be used at the face. After leaving the dip-face on the morning of the explosion, Clegg examined the south levels. George Lawton, the underground manager, and his son came down soon after 5 o'clock. He told Lawton the state of the workings, mentioning in particular the blowers. Lawton said he had given orders for safety-lamps only to be used at the dip-facings. At 9 o'clock he went to the cupola furnace. There were good fires, and everything appeared to be going on as usual. The general ventilation appeared to be good up to 9 o'clock. He saw no indications of danger at the furnace. At 9 o'clock he came out of the pit, and about went home. He heard the alarm a little after 12. He then went to the pit, and about 1 o'clock descended the pit-shaft. Soon after he got down he heard an explosion, and left the blast. He and Guest were in the box-hole, which is about 8 yards north of the downcast shafts, and is a kind of cabin. There was much smoke, but he saw no fire or sparks. There was also a great quantity of after-damp. He had difficulty in getting through it. He was drawn out as soon as he got to the shaft. He was nearly insensible in passing through the after-damp from the box-hole to the shaft. On getting to the office, and was requested to go again into the pit, to see if the cupola furnace was still burning. He went, but did not see a bit of fire, though he went within 10 yards of the furnace. There was so much smoke and gas that he could not have remained for a moment at the furthest point to which he went. John Guest and Ralph Simms were with him. They returned, and came out of the pit directly. He went down the pit a third time, about half-past 2 o'clock, with Mr. R. H. Maddison and other men. He went down the incline about six slit lengths, or 120 yards. The stoppings were blown out of five of the slits. The ventilation was stopped, and they could not get any further, on account of the smoke and after-damp. It was impossible for any human being to live in the atmosphere they were in at the time. They saw no injured or dead body on the road. It was his opinion at the time that everybody in the pit was dead. On reaching the stable-end, which is about 20 yards south of the shaft, they consulted. They all told Mr. Maddison that no one could live in the atmosphere, and that it was impossible to get farther than they had gone. After remaining five minutes at the stable-end, they returned to the bottom of the pit, and ascended to the surface. About 4 o'clock he went down the pit a fourth time, and assisted to bring out nine horses, which were in the stable. The horses were got out alive, and did not ap-

pear any worse. A tenth horse was killed in the pit; it was not in the stable. He had been a colt about 35 years, and worked in many pits. He never was in any pit so well ventilated as that of Edmund's Main.

James Johnson said he was employed as shot-lighter at the Edmund's Main Colliery. He was appointed by George Lawton, and commenced his duties on the Friday evening before the explosion. He was ordered by Lawton to light the shots at the face of the dip bord-gate with touchpaper, and was to cut the soft coal within a foot of the face before lighting them. No other person was to light the shots during his shift. He had a Davy lamp. The hurriers had candles, and the colliers lamps. The hurriers went within five yards of the face with the candles. There was sulphur in the place. About 3 o'clock on Saturday morning, while he was in the back bord, he heard the men wafing in the front bord. When he got there he found gas-blazing right across the face, just under the edge of the soft coal. William Archer and William Flinn were trying to waf the fire out. He and the other men helped them, taking their turns at it, and in about an hour they got it out. They used lamps during this time. The coal got red, but did not blaze; only the gas blazed. The gas fired at the candle of the hurriers. They got the fire out about 4 o'clock; he stayed until 4:20 A.M., to see all was right. He then went away, taking the men with him. He would not have any more done till he had seen Lawton. He told Mr. Lawton what happened, and he said then they must use nothing but lamps. Nobody in the bord-gates had naked lights after that but the horse-drivers. They came down to the corves with their light to hang on; that would be 4 or 5 yards from the face. He went to his duties as shot-firer for the second time on Sunday night. He fired two shots during Sunday night. Nothing particular happened during the night. He came out 20 minutes before 6 o'clock on Monday morning. All went on well up to that time.

Joseph Walton deposed that Lawton told him the colliers were not to fire a shot until the soft coals were taken down within a foot of the face of the hard, and that the hole for blasting was to be drilled in the black list—that is, between the coal and shale, about 4 ft. from the floor. He was to stop with the colliers and see this done, but he had not orders to fire the blast; the colliers were to do that. He stayed until half-past 2 o'clock on Saturday, when George Pickering relieved him. He said to him, "What does that think of the job? I am afraid something is going to happen." Pickering complained that one bord-gate was making too much gas, and said the brattice sheets should be altered so as to introduce more air. Walton did not go and tell Lawton this, though he thought Pickering was right. Pickering made a mark with chalk in the coal, and said he and Clegg had agreed to put the brattice there, but Lawton would not agree to it. There was plenty of gas on the Saturday. There was enough to fire at the lamps all the day, from 6 in the morning until 2 P.M. He did not send the men out, nor did he tell anybody about the gas firing in the lamp. He did not tell either Lawton or his son. They would know better than him. They were not at the place after morning. All that he did on Saturday was to remain near the face, and see that the miners cut soft coal within a foot of the fall, and drilled the blast holes into the black list. On Monday morning about 7 o'clock he saw Lawton about 30 yards from the face of the dip bord-gate. He said he wished they were through to Swaithe shaft, the point to which the bord-gates were being driven. He was very uneasy in his mind, and was afraid something would happen. At the time Lawton came to the dip face he gave me a lamp key, and told me to take the lamps 30 yards from the face to unlock them when they wanted squaffing. There were only two shots fired after he went on Monday, one in the straight bord-gate and the other in the back bord-gate. He fired the one in the straight bord-gate between 9 and 10 o'clock. The second was fired about a quarter of an hour after the first. Thomas Guest fired it. He uncrossed his lamp top to light the touchpaper, and then gave the touch-paper to Thomas Guest, who attached it to the fuse. As soon as the fuse was lighted they all went into the slit. The gas fired at the fuse before the shot went off. The fuse would be five or six seconds in going off. The blaze covered the whole face of the coal before the shot went off. He wanted to go and wait it out, but Guest said it was too far gone. They all beat the flames with their clothes immediately after the shot went off. They also threw slack upon them, and did everything they could to put them out, but without success. Gas came from slits over the whole face of the coal, not from any large orifice. They exerted themselves more than half an hour to put out the flames, and then went into the level and filled a corfe with bricks.

While he was doing this Lawton's son came. He had sent Archer to tell him about 20 minutes after the gas fired, and Henry Lawton came about half an hour after that. His intention was to build a stopping at the Swaithe level. Henry Lawton said it would be wise to make the stopping. They were going to put the stopping across the straight bord-gate to stop the incoming air. The smoke came back upon them in such volumes that they were unable to build the stopping. At this time all the men employed in the bord-gates had gone to the pit bottom except himself and Lawton. He saw no flames at Swaithe level. When it became impossible to build a stopping at Swaithe level, Henry Lawton went to the pit bottom to order bricks to build a stopping at the second half-way, to cut off the air there. There were no bricks and materials they could use at the half-way. The bricks had to be fetched from the pit bank, and the mortar from the pit bottom. He went after Lawton, and when he got to the second half-way he saw Dick Watson and Sam Tyas. They asked whether they were to warn the men. Walton at first said he had no orders for them, and afterwards to warn all they could. He was quite exhausted at this time, and came out. Watson and Tyas wanted to help him, but he just managed out myself. Fresh men could have built a stopping at the second half-way had they had materials. He was exhausted with breathing the smoke in the other parts. It was nearly 12 o'clock when he got out, and there had been no explosion then. George Pickering was on the pit bank when he got there. Pickering had twice saved his life. The explosion occurred when he was in the storeroom. George Lawton gave orders when safety-lamps were to be used and when candles. Walton did not appear to be. Henry Lawton acted as the deputy to his father, and was responsible when he was absent. Both Henry Lawton and his father are among those who have perished.

It was elicited by Mr. Morton that safety-lamps had been used in one place, about a week before the time of the explosion, in consequence of gas. The gas had, however, disappeared, and candles had been resumed. In every other part of the pit, except the face of the dip bord-gates, candles were used, and with perfect safety; and, in reply to questions from the jury, Walton stated that when Henry Lawton returned from the pit-bottom, after ordering the bricks, he saw him near the second half-way, and told him to go out of the pit. He did not go in again. He did not hear Henry Lawton, or anybody else, give orders for the men to be warned. Archer went to him at the Swaithe levels, and told him he had warned some. There was time to warn all the men. If Henry Lawton had sent men round to warn them at the time they were driven from the Swaithe levels all might have been out half-an-hour before there was an explosion. Upwards of three-quarters of an hour elapsed from the time of Henry Lawton coming to him in the Swaithe levels to his getting out of the pit. This was ample time for all the men to have got out.

The engineers met on Wednesday to consult as to re-opening the pit to recover the dead. A few minutes after they had decided not to enter the pit at present, another terrific explosion occurred. It was afterwards determined to partially fill up the cupola shaft, and seal the mouths of the other two shafts, and flood the entire pit with water. The recovery of the bodies is delayed for months, and no more lives are lost.

PROCESSES OF MINING ON THE PACIFIC COAST—No. II.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—There is a process which may be termed dry washing, used where gold is found abundant and coarse, the gold being winnowed from the earthy particles with which it is mixed, and thrown into the air. When fine gold is simply intermixed with black sand, blown in the form of an elongated trough, converging at one end, is used for the operation. In this trough the sand and gold are placed, the aperture for the lips or artificial blower being at the narrow extremity, allowing the breath to skim the surface and dissipate the sand. This comes into use in beach mining, when, mounted on mules, the miners rush upon the patches of black sand left momentarily bare by the breakers.

In choosing a location for quartz mining, the axiom must be acted on that where no gold is discoverable on the surface no gold worth deep mining is to be found. The direction of the auriferous veins, and of the quartz containing it, is generally north-north-west and south-south-east. The vein having been discovered, the higher up it can be traced the better. Breaks in the surface continuation will be found constantly occurring, and at these points the miner breaks up the overlying earth and rock, and continues his course; choosing then the spot where surface indications have been richest, he sinks a shaft and cuts through the vein. The casing, where it joins the wall rock, should be carefully tested; it frequently happens that the casing is richer than the vein itself. This casing of smooth faces, with its numerous ridges and grooves, will always indicate the line of projection, or the direction in which the vein was forced up between the walls of rock embracing them. Quarrying the rock, pulverising it, and separating the gold from the powder, are the three processes in quartz mining. Contrary to the rule in placer mining, which require merely the earth containing the gold to be dissolved in water for effecting separation, it is necessary in quartz mining to separate the gold from the rock, to reduce both to a very fine powder, and even then from 10 to 20 per cent. will certainly be lost. If the sluice carries off much gold with water, so the attrition of the stamps in quartz crushing results in an equal proportion of loss, the stamps being certain to be coloured by the gold. To reach the great rocky ridge termed the "bed rock," on which the chief deposits of gold are found, is a grand object with the California miner. Sometimes it crops out at the surface; at other times it must be sought for hundreds of feet beneath the soil. Where nearing the surface, the stratum of earth may be washed away by a powerful stream from hose being turned upon it. The mode of quarrying the auriferous rock in California is too familiar to be detailed, the pick, shovel, crowbar, and blasting powder being the instruments brought into use. The sluice process, so extensively resorted to, may be thus described. A large wooden trough of any length, frequently 1500 ft. long, is adjusted to 1 and 1½ in. per foot, walls, timber, and various mechanical means being usually employed to maintain the grade. Riffle bars are placed along the whole length of this sluice. A stream of water courses down, and the quartz is put in at the head of the sluice. Two hours after commencing working, the quicksilver is put in at the same point to work its way downwards. The particles of gold and silver in amalgam are arrested in numberless cavities. Frequently the sluices are doubled, so that the cleaning may not altogether suspend operations. The ground sluice is not made of boards, but is a ditch formed in the mining ground.

Large quantities of rich quartz are never found together; the rich is, accordingly, crushed with the poorer rock, the average yield being 4L 10s. to the ton. The mills where the quartz is pulverised, and the gold extracted, are usually situated in ravines, and driven oftener by steam than water. Numerous tramways frequently connect them with the quarries and the mouths of shafts and tunnels. The process of crushing makes a dull and grating, but, to the miner's ears, most welcome sound: 95 per cent. of the pulverised quartz of California is now crushed either by the square or rotary stamp. The square stamp works in a perpendicular groove, in which it is elevated by a revolving horizontal shaft. The hammer consists of a timber shaft, from 5 to 8 inches square, shod with iron; it weighs from 100 to 1000 lbs., and has a fall of from 6 to 18 inches. When the quartz is the size of a pigeon's egg, it is thrown into the battery, which is surrounded by a sieve or screen, to allow the quartz, when sufficiently pulverised, to escape. It is a noticeable fact that the newer and more rapid

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modes and processes of crushing and amalgamation secure a less percentage of gold, or, in other words, lose more gold than the older processes, as represented by the slow and clumsy Spanish astra, and which is still employed by Mexicans in California—the drawing, by mules or horses, of a large flat stone, with one end elevated over a mass of broken quartz, meanwhile admitting quicksilver and water till the whole becomes a thin mud, to be then drained off. Evidently there is still room for improvement in processes of pulverising and amalgamation. At present from 10 to 25 per cent. of gold is lost—a serious amount when the extent of the yield of the California gold mines is taken into consideration. C.

MINERAL RESOURCES OF THE TERRITORIES OF THE UNITED STATES.

The following is an abstract of the report of the Commissioner of the Land Office, Judge Edmonds, to the Secretary of the Interior:

Coal is found in great variety and abundance between the Mississippi and the Pacific. That important element, so essential for domestic, mechanical, and for navigation purposes, affecting our vast internal intercourse and trade, and our external commerce is, of course, a very prominent subject of interest to our people. The extent of the twelve coal-bearing States east of the Mississippi holds but a small proportion to the immense coal fields west of that region, as we have information reporting the existence of coal in Dakotah, Kansas, Nebraska, Colorado, Utah, Nevada, California, Oregon, and Washington. A railroad about six miles long is projected from the San Joaquin, extending south toward the Mount Diablo, for the transportation of coal from the mines there, designated as the Pittsburgh, Union, and Eureka. Discoveries of coal have been made at Bellingham Bay, Washington territory. This coal contains a very large amount of oxygen, and but little hydro-carbon; so much so, that it gives off comparatively but little combustible luminous gas or smoke, and appears to be almost as difficult of ignition as semi-anthracite. It is regarded as a fuel superior to any tertiary lignite, approaching the composition of the coal of the Western States, taking a high rank as a fuel in comparison with ordinary lignites. Then there are the Willamette River and Cape Flattery coals, belonging to the lignite type, and serviceable for the smelting of iron and for ordinary fuel, some of the Cape Flattery coal being reported as pretty good for steamboats. In Nevada, good coal has been discovered in the neighbourhood of Dayton, formerly China Town, and superior specimens have reached here from Colorado, showing the wealth of that territory in this great industrial agent.

The great auriferous region of the United States, on the western portion of the continent, stretches from the 49° of north latitude and Puget Sound, to 31° 30' of parallel; and from the 102° of longitude west of Greenwich to the Pacific Ocean, embracing portions of Dakotah, Nebraska, Colorado, all of New Mexico; with Arizona, Utah, Nevada, California, Oregon, and the Washington territory. It may be designated as comprising 17° of latitude, or a breadth of 1100 miles from north to south, and of nearly equal longitudinal extension, making an area of more than 1,000,000 square miles. This vast region is traversed from north to south, first, on the Pacific side, by the Sierra Nevada and the Cascade Mountains, then by the Blue and Humboldt; on the east by the double ranges of the Rocky Mountains, embracing the Wasatch, the Wind River chain, and the Sierra Madre—stretching longitudinally and in lateral spurs—crossed and linked together by intervening ridges, connecting the whole system by five principal ranges, dividing the country into an equal number of basins, each being nearly surrounded by mountains, and watered by mountain streams and snows, thereby interspersing this immense territory with bodies of agricultural lands, equal to the support not only of miners, but of a dense population. These mountains are literally stocked with mineral, gold and silver being interspersed in profusion over this immense surface, and daily brought to light by new discoveries. The precious metals are found imbedded in mountains of quartz, rich washings marking the pathway of rivers and floods. Beside their wealth in gold, no part of the world is so rich in silver mines as Nevada and New Mexico; yet these may be estimated as only in proportion to the gold fields, which are in process of development with amazing results. The recent discoveries in the Colorado, or southern portion of California, and in the region stretching thence away up to, and north of, the Salmon River, in Washington territory, are every day stimulating the mining enterprise of our people.

Prior to the gold discoveries in 1848 at Sutler's Ranch, in California, the gold product of the world was only an annual average of \$18,000,000. In 1853 the yield of California was \$70,000,000, about four times the aggregate gold product of the world prior to 1848, and that sum may be set down as the present average from that State alone. If we compare the known gold fields elsewhere in our public domain with the yield of California we would have, if an equal ratio of labour were applied, an annual value of between \$300,000,000 and \$400,000,000. Even in the distant territory of Washington, the extreme mosaic block of the Union, the product of the Salmon River Mines has been estimated at \$20,000,000 the present year, the developments there, too, having been made under every disadvantage. First, in a season of unusual severity, with deep snow; next, in restricted facilities of travel into the interior, and with inadequate labour, and in times of domestic turmoil.

An immense revenue may be readily obtained by subjecting the public mines either to lease, under quarterly payments or quarterly tax, as seigniorage, upon the actual product, under a well-regulated and efficient system, which would stimulate the energies of miners and capitalists, by securing to such classes an undisputed interest in localities for specified, and, when the conditions as to payment for the usufruct are complied with, for unlimited periods, and, while effecting this with beneficial results to them, would relieve the necessities of the Republic. Assuming the National Debt, on July 1, 1863, to be \$778,000,000, the Commissioner says that a tax of some 8 per cent. on the whole yield of the mines would, upon the maturity of a proper mining system, and when the same shall eventually go into full operation, pay off this interest, enable the Government to reduce, by at least two-thirds, the existing direct tax, and from the residue and imposts have an annual income sufficient to support the Government, and provide a fund for the gradual extinction of the public debt, and restore the currency to a metallic basis.

The usual size of a mining claim in the quartz region is 100 feet on the line of the lode or vein, and 100 feet on each side, equal to an area of 20,000 square feet, or (say) 1200 claims to the square mile. Allow that only one hundredth part of the mountain surface is occupied by paying leads or veins, there will be space for 3,600,000 claims. But Governor Evans, of Colorado, estimates the already discovered gold-bearing region of that territory as affording ample room for 800,000 claims, and states that new discoveries are daily increasing this area. A glance at the map is sufficient to show that the mineral region of Colorado occupies less than one-sixth of the whole extent under consideration; but assume it to be one-sixth, there will be ample extent on this basis for 4,800,000 claims, which if worked would give employment to 20,000,000 of men. Quartz that yields \$12 per ton will pay in favourable localities, but there are many veins now worked that yield from \$20 to \$500 per ton, and some that yield from \$500 to \$2000 per ton, varying in different parts of the same lode. Some of the recent discoveries are estimated as high as \$20,000 per ton, but these have not been worked. In addition to the deposits of gold and silver, above specially alluded to, various sections of this whole region are rich in precious stones, marble, gypsum, salt, tin, quicksilver, asphaltum, coal, iron, copper, and lead; mineral and medicinal, thermal and cold springs, and streams. None of these mines have been worked for a great length of time, except the placers of California, and much the largest portion of them are comparatively recent discoveries; yet it has been fully demonstrated that the deeper the mine is worked the richer is the ore or rock. Mines that barely paid at the surface are yielding enormous profits at a depth of 150 to 200 feet. And when the geological formation of this region is carefully considered, it will be conceded that even the precious metals must be found in masses and in position, if a sufficient depth shall be reached.

The above estimate of the extent of the mines may seem extravagant, but it is believed experience will demonstrate that the estimate is too low. Not now, nor for many years to come, because the population is not there; but as fast as the population does reach that region the correctness of these conclusions, it is believed, will be vindicated. Within the last eighteen months more has been done to establish the position assumed than all the discoveries previously made. The coming year and a half will do still more. The yield of the precious metals alone of this region will not fall below \$100,000,000 the present year, and it will augment with the increase of population for centuries to come. The value of these mines to the country is absolutely incalculable; to the Government they may be made to yield in revenue just in proportion to the number of men employed

in working them. This year they should yield \$10,000,000, and would do so under the operations of a well-matured system. The experience of miners in those districts which have been successfully worked has demonstrated the prosperity, and, I may add, the necessity of dividing the mineral lands into small parcels or claims.

THE GOVERNMENT RECOMMENDED TO HOLD THE MINES.—This office cannot recommend any measure for the sale of the mineral lands, but would advise the retention of the fee in the United States, and that they be held open to the free occupation of all our people, subject only to a nominal annual license, and such monthly, quarterly, or annual moderate percentage upon the product as shall be prescribed by law. A limitation as to the quantity which may be held by any person is also advised, with the guarantee that such quantity may be retained so long as the location shall be occupied, worked, and payments duly made to the Government.

—United States Railroad and Mining Register.

FOREIGN MINING AND METALLURGY.

From Belgium we learn that a royal decree, dated Dec. 1, 1862, has approved certain modifications made in the statutes of the Providence Rolling Works, Blast Furnaces, Foundries, and Iron Works Company. The Act extending the term of the society's existence is also confirmed. The position of the Belgian iron market has not experienced much change; the aspect of business is stated, however, to be difficult, and to secure important contracts ironmasters must submit to prices which leave them little profit. An adjudication for rails, to be furnished to the State lines, will take place towards the close of the year, and is, of course, anticipated with some eagerness. The last adjudication produced dismay and confusion in the Belgian metallurgical interest, and the reading of the tenders now about to be submitted will be awaited with lively curiosity by numerous persons whose attention is devoted in one way or another to the fabrication of rails. An important tariff reform has just been made by the Spanish Government, which has reduced its customs' duties on pig entering Spanish ports under the national flag to 17s. 8d. per ton for pig, and 4s. 11s. 2d. per ton for rolled iron in bars. These new conditions of importation will, perhaps, admit of English pig and iron being introduced into Spain on a tolerably extensive scale, and English ironmasters are not the men to lose sight of any opening presented to them for the development of their industry. A more cheerful report is made with regard to the coal trade of Mons, in respect to which such doleful complaints were put forth a month or two since. Advises from Mons now state that there is a decided revival of activity in the rich coal workings of the basin; the orders received for coke for metallurgical purposes are considerable, and several companies have their production bespoken for 1863, so the more recently-concluded contracts indicate some augmentation in prices. There is reason, it is added, to believe that this situation will be maintained in presence of the impulse which has been given in the Haute-Marne to the fabrication of pig with coke, together with the activity which prevails in the ironworks in the neighbourhood of Maubeuge and in the Boulonnais.

The prosperity or otherwise of the railway interest is so closely identified with metallurgy that we need offer no apology for referring to a valuable table just issued by M. de Laveleye, a pains-taking and able Belgian writer. M. de Laveleye estimates the length of railway in operation in 1861 in Germany, Belgium, Denmark, Spain, France, Great Britain, Holland, Italy, Portugal, Russia, and Switzerland at 34,209 miles, as compared with 31,779 miles at 1860. Assuming M. de Laveleye's figures to be correct, and they are not very far wide of the mark, it would, therefore, seem that 2430 miles of railway were brought into working in 1861—a great stride for a single year. The traffic receipts are estimated at 74,033,550L in 1861, as compared with 67,738,718L in 1860, showing an increase last year over the preceding 12 months of 6,294,832L. The receipts thus advanced at a somewhat faster rate than the mileage, the proportion per mile being as 101 in 1861 to 93 in 1860. During the present year, however, business affairs have so seriously clouded over that this encouraging advance of 3 1/2 per cent. per mile in operation will not be maintained; and, on the contrary, retrogression will probably be observable, instead of progress. The receipts of the German state lines advanced last year in the ratio of 67 to 70, and those worked by companies in the ratio of 82 to 89; the Belgian state lines in the ratio of 114 to 122, and those worked by companies in the ratio of 65 to 74; the Spanish lines in the ratio of 58 to 60; the French lines in the ratio of 120 to 131; the Dutch lines in the ratio of 54 to 59; the Italian state lines in the ratio of 88 to 94, and those worked by companies in the ratio of 63 to 66; the Portuguese lines in the ratio of 24 to 25; the Russian state lines in the ratio of 131 to 141 (those worked by companies fell off in the ratio of 42 to 41); the Swiss state lines in the ratio of 78 to 81, and those worked by companies in the ratio of 51 to 57. The most lucrative traffic per mile seems to be enjoyed by the French lines, which made a prodigious stride in 1861, when their receipts reached an aggregate of 18,416,042L, as compared with 16,299,924L in 1860, while the English advanced, according to M. de Laveleye, to 27,694,747L, as compared with 27,025,883L in 1860. M. de Laveleye's figures are not quite correct, although they have probably been made up with care and diligence. Thus the English Board of Trade, which must be accepted as a better authority, returns the earnings of British railways at 28,565,556L in 1861, as compared with 27,768,622L in the year 1860. Nevertheless, M. de Laveleye deserves the thanks of all lovers of statistics, and observant members of society, for the light which he has concentrated upon a very interesting subject; and probably as regards continental systems his information may be accepted as more rigidly conclusive. He admits himself that it is difficult for an unofficial reporter to completely collate all the facts which require to be brought together, and it is obvious this apology is perfectly well founded.

French ironmasters are engaging with vigour in the reforms necessary for securing a prosperous metallurgical industry in their districts. Thus siderurgy with wood is languishing more and more, and will soon become only a lingering recollection of the past, as in England and Belgium.

In the Haute-Marne, the introduction of coke in the fabrication of pig has become almost general, and to this circumstance is attributed a rise which has taken place in pure charcoal-produced pig, now become extremely scarce, and selling at 5s. 8d. per ton. At present, irons are comparatively neglected, rolled from wood-produced pig being quoted at St. Dizier 9s. 8d. to 9s. 12s., and hammered 10s. 16s. to 11s. 4s. per ton; the forge-masters anticipate, however, an early revival of activity. The producers of the Franche-Comté complain of great underselling; nevertheless, pig has maintained its price pretty well. A letter from the metallurgical group of the Ardennes predicts that a prosperous future is reserved to that district. For a long time it was considered necessary to bring minerals to coal; in other words, to create blast-furnaces in the midst of collieries, but now this principle has been reversed—coal is brought to minerals, and efforts are made to place furnaces in the neighbourhood of rich mineral bearings. Thanks to this change of views on the part of capitalists engaged in metallurgical pursuits, the Ardennes will probably secure the creation of a metallurgical industry, which can be developed under favourable conditions. By the designation "Ardennes," it may be convenient to observe is meant all the country in the north-east of France, and skirting the Belgian frontier from Hirson as far as Longwy. The creation of blast-furnaces with coke at Vireux, by M. Mineur and Wilmot, Belgian ironmasters, first gave an impulse to metallurgy in this district; and it may be added, as a matter of news, that St. Nicholas furnace at Revin, which M. Morel has taken from the old Herserange Company, has been re-lighted, with another furnace on a large scale is now being constructed at Longwy, in the centre of the mineral bearings. These establishments are fed at great part with minute minerals coming from Poix, and costing 5s. to 5s. 9d. per ton. When the Ardennes Railway is completely finished as far as Longwy, it will open up some rich bearings, forming part of the great mineral formation to which belong the workings of Athus, in Belgium, and Rumelange, in the Grand Duchy of Luxembourg. The minerals which are extracted there near the surface of the soil do not pay more than 3s. 4d. to 4s. 2d. a truck. As regards minerals, then, the Ardennes have abundant and ready supplies. In respect to coke, the forge-masters procure it from Charleroi by the East Belgian and Ardennes lines. Coal on entering France via Givet pays a customs' duty of only 10d. per ton, to which the double decree must be added. The same tax is applied to Prussian coal, and it is less than the charge applied to coal imported through that part of the frontier between the Meuse and the sea, which is 1s. 3d. per ton, plus the dectimes, or 1s. 6d.—a sensible difference. Another element of success for works producing pig at a cheaper rate may be found in the fact that in the north-east of France a great number of establishments working iron are clustered together; thus at Charleville and the neighbouring villages may be found numerous shops engaged in the production of bolts, iron for carriages, nails, &c. A workshop for the construction of machinery and plant was founded in this locality some time since, but did not, however, succeed. It is calculated that altogether the fabrications carried on in this locality consume 12,000 tons of iron annually, of which three-fourths are furnished by the Hayange Works. Different works, conducted with wood, exist still at Vrigne, Messancy, Margut, and Daigny. They deliver special pig and iron of very fine quality, but at too high a price. The recent junction of the Ardennes system of railways with the Sambre and Meuse and the East Belgian lines, and the approaching opening of the line from Givet to Namur and Liège, besides the improvements effected in the navigation of the Meuse, must bring about a complete transformation in the prospects of metallurgy in the district.

There is no great change to notice in the price of copper in the principal continental markets. At Paris, English in plates has been quoted at 95L, and tough cake on the same terms; Lake Superior at 107L; Chilian at 91L; and Corocoro mineral at 95L. At Havre, Chilian and Peruvian in bars have made 89L; Peruvian mineral (pure), 89L; United States (Baltimore), 98L; Lake Superior, 103L to 104L; Mexican and La Plata in bars 80; Russian, 104L; old yellow copper, 54L to 58L; and red ditto 87L. In consequence of intelligence received from Singapore that a great quantity of tin has been purchased for China, an active demand for Banca has appeared at Amsterdam and Rotterdam. At Paris, Banca has been quoted at 122L; Detroit at 121L; and English at 115L. At Havre, Detroit has been quoted at 116L to 118L; Peruvian at 98L; and Peruvian mineral at 82L to 88L. Lead has been firm, but a little calmer. Spanish has been quoted at Paris, 22L; French at 21L. 12s. to 21L. 16s., and Belgian at 21L. 12s. At Havre, Spanish has been quoted at 19L. 12s. to 19L. 16s. Rough Sicilian zinc has stood at Paris at 18L. 12s. to 18L. 16s.; roiled at 26L.

The Courcelles-Nord Colliery Company has just announced the payment of interest at the rate of 11 per cent. in respect to the exercise of 1861-2. This dividend will become payable January 15, 1863. This undertaking is one of the many originated by Belgian enterprise.

AMERICAN DIAMOND.—The largest diamond in North America is now being exhibited at Boston. It was found about a year since, in the northern part of North Carolina, on the Virginian border, near the Blue Ridge. In the rough it weighed nearly 24 carats, and the cut diamond weighs nearly 12 carats. Its value is between \$10,000 and \$12,000, and but for almost inappreciable spots it would be more. In size it approaches a large plum-stone in length, but it is deeper and broader—almost a square on the face, with rounded corners. Each of the numerous facets had to be ground down separately, it being unsafe to chip off corners for fear of cracking the stone. The cost of the fine sand used for this purpose was above \$100, and the charge for the entire work was \$1500.

ALLOYS OF ALUMINIUM.—Two alloys of this metal have been manufactured at Newcastle—copper 95, aluminium 5; and copper 92½, to 7½ of aluminium, and called by those working them aluminium bronze. We have examined both proportions, and give preference to the 7½ per cent., especially for colour. The hardness appears quite equal to the best brass, while the colour is that of rich gold; it takes a high polish, and appears to work soundly. We recommend experiments with this latter—7½ aluminium bronze—to our readers, and suggest that particular attention be paid to

the effect of atmospheric moisture with varying temperatures, as it is represented not to tarnish. If such be the case, its employment for the frames of watches and chronometers might save much labour and expense.—*Mechanics' Magazine*.

NORTH OF ENGLAND INSTITUTE OF ENGINEERS.

The tenth and eleventh volumes of the Transactions of this Association contain, perhaps, more valuable and practical information than any which have preceded them. In his inaugural address at the Birmingham meeting the President, Mr. N. Wood, remarked with reference to colliery explosions, that he thought that if all the facts which attended the great explosions were collected together, and subjected to investigation, they would be extremely useful in preventing such accidents in future. As stirring explosions continue to occur, it would be well if at least an attempt were made to profit by Mr. Wood's suggestion. He tells us that the accident at Hetton cost fully 10,000L, besides attendant expenses, a fact that certainly shows that the prevention of accidents would be a great pecuniary advantage to the coalmaster, as well as increasing the safety of the men.

The advantage and necessity of the introduction of steam power for the purpose of underground conveyance in the coal and ironstone mines of South Staffordshire was pointed out in the paper by Mr. Samuel Bailey, of Walsall, and an interesting discussion followed its reading. Mr. T. Young Hall, of Newcastle-on-Tyne, contributes a paper on the Rivers, Ports, and Harbours of the Great Northern Coal Field, with a plan showing the facilities of transit possessed by northern colliery owners, and the benefits that will accrue from the proposed improvements of the River Tyne. Mr. R. Ayton, read a paper upon his improved Safety-Cage, which has been frequently described in the *Mining Journal*. In the discussion which followed, Mr. Handel Cosham said that he thought the result of adopting inventions of this character must naturally be that the engineers will feel themselves released from a portion of their responsibility, and may become proportionately careless, the result of which may be accidents of other descriptions. Mr. Berkeley thought that the greatest proportion of accidents in shafts were caused from other than the breaking of the rope. Mr. Matthews had found springs in answer better than a bite apparatus, like Ayton's. Mr. Handel Cosham contributed a technical paper on the northern end of the Bristol Coal Field. The next paper is a particularly interesting one, by Mr. J. T. Woodhouse, on the Progress of Coal Mining in the Counties of Derby and Nottingham, with a brief account of the system of working by Long Wall. Mr. Buxton's Ventilation Register and Detector, which is described in the next paper, by Mr. W. F. Howard, is well worthy of perusal. Mr. C. F. Starr Smith, of Dudley, contributes a paper on the Winning and Working of the Cinder Hill Colliery, near Nottingham; and Mr. G. Fowler, of Ashby-de-la-Zouch, has an equally practical paper, on the Method adopted of Working the Main Seam of Coal at Moira, in Leicestershire, particularly with reference to Spontaneous Combustion. Mr. Darlington described the system explained as a very simple and effectual way of dealing with the difficulty. A paper on the Working the Thick or Ten-Yard Coal of South Staffordshire was read by Mr. Henry Johnson, of Dudley, and an interesting discussion followed. Mr. P. S. Reid, of Peleton Colliery, described a method of tubbing bore-holes in the ground through clay, quicksands, and other arenaceous and water-bearing strata; an interesting paper, which has already been abstracted in our columns, on the various Modes of Ascertaining the Velocities of Currents of Air in Mines, in order to determine the quantities circulating in a given time, by Messrs. J. J. Atkinson and John Phillips, completes the volume, which is published, handsomely half-bound, at the *Mining Journal* office, price 21s., at which rate the several other volumes of the Transactions may also be had.

The eleventh volume, which contains the papers, &c., down to August of the present year, commences with a paper by Messrs. J. J. Atkinson and W. Coulson, son, on the precautions proper to be adopted in order to secure the stability and prevent the displacement or failure of close-topped tubbing in the shafts of mines. Mr. John Daglin describes a paper on the Destructive Action of the Furnace Gases in Upcast Shafts; and Mr. S. C. Crone, on Steam-Blast Explosions. Mr. E. Gibson contributes a geological paper on the Border Districts of Dumfriesshire, Cumberland, and part of Roxburghshire, including the Coal Formation of Canonbie: an abstract of this paper has already appeared in the *Journal*. Mr. J. J. Atkinson next details the performances of a Ventilating Fan at the Hemingfield pits of the Elsecar Colliery. A paper by the President (Mr. N. Wood), on the Border Districts of Durham, follows; and next comes a paper on the accident at New Hartley Colliery, by Mr. G. Forster, M.A. Mr. William Green, jun., contributes an interesting paper on the Origin and Formation of Coal. On the whole, this volume is particularly useful; but Mr. Wood's very valuable Observations on the Mineral Section of the International Exhibition of 1862 is given as an appendix.

Meetings of Mining Companies.

WEST CARADON MINE COMPANY.

A general meeting of shareholders was held at the company's offices, Broad-street-buildings, on Wednesday,—Mr. A. HARRIS in the chair.

Mr. DUNSFORD read the notice convening the meeting, the minutes of the previous meeting, the agents' report, and the statement of accounts, of which the subjoined is an abstract:

Balance last audit	£5026 15 9
Copper ore sold, carriage, and sundries	3387 4 2 = £8613 19 11
October dividend	£ 512 0 0
Mine cost, royalty, and sundries	3584 13 3 = 4096 13 3
Leaving credit balance	£4517 6 8

The profit on the two months' working was 27. 10s. 11d.

Dec. 16.—Seeing there is no material change in the mine, I think there is no necessity to give a long report, although our levels up to this time are poor, still there is, in my opinion, never better chances of success. Our various cross-cuts are pushing on with all possible speed, and the ground is of such a congenial character as cannot fail in cutting productive lodes. In the 155, on Menadue lode, we have driven over 40 fms. of ore ground, varying from 2 to 4 tons per fm.; the present end worth about 1½ ton per fm. A winze sinking in the bottom of the 140, about 3 fathoms in advance, producing about the same quantity. The 155 west, on Allen's, or the main lode, is producing saving work, with a very promising appearance. The 92 east, on Menadue lode, is producing good stones of ore. A winze below the 60, in the new lode, is opening up tribute ground. In the 17 west, on Menadue lode, the lode has undergone a change, composed of mudiic and spots of ore; this we consider a favourable indication. There are other ends not mentioned, which we hope shortly to report something good of. We have not lessened our tattow operations, and have our usual number of pitches working, and shall remain at our usual time about the same quantity of ore. —F. PRYOR, W. JONES.

The CHAIRMAN regretted that the price of ore had continued low. Compared with the beginning of the year the fall had been equal to 15 per cent., which made a difference to them of about 1½ per ton.

In reply to shareholders, Mr. DUNSFORD stated that he was on the mine a month ago, and so far as he could see there was no alteration. There is much unexplored ground on the western side of the sett, and it was from the exploration of this part that great hopes were entertained.

A SHAREHOLDER enquired whether they had worked to the boundary in the upper levels to the east?—Mr. R. HALLETT said that the shallower levels to the east had some time since been carried up to the boundary, but they had not explored the sett. At the present time they were anxiously looking to Pryor's shaft. They were now 14 fms. below the 17, and it was intended to drive out at 15 fms. The reason they had an interval of 15 fms. was owing to the softness of the ground.

A SHAREHOLDER enquired whether a call would be made?—Mr. HALLETT was not aware that there was any thought of a call; their disappointment was that there would be no dividend. If they were to cease exploratory operations they could pay a dividend, but that would be bad mining, and they had no thought of adopting such a course. The quality of the ore raised was about the same, but the quantity was rather less. They were not lessening exploring expenses at all.

The report and accounts were then unanimously adopted. Thanks were voted to the Chairman, and the proceedings terminated.

TREVENEN AND TREMENHEERE MINING COMPANY.

A general meeting of shareholders was held at Mr. Murchison's offices, Bishopsgate-street Within, on Monday,—Col. BAZALGETTE in the chair.

Mr. WESCOMB (the purser) read the notice convening the meeting, and the minutes of the last were read and confirmed.

A statement of accounts was submitted, which showed—

Balance last audit	£541 17 10
August, mine cost, merchants' bills, &c.	571 11 8
September ditto	681 1 8
October ditto	685 12 9
London agency, expenses of general meeting at Helston, commission on cheques, &c.	31 14 10
Tues	100 5 0 = £2621 12 9
Call received	£ 699 10 0
The sold	1875 4 8 = 2574 14 8

Leaving debit balance

£ 46 18 1

The arrears of call amounted to 321. 15s. The report of the agents was read, as follows: Dec. 12.—Since the last general meeting the 178 has been driven east of Trevenen engine-shaft 4½ fms., and holed to the water; this did not drain the old mine to the bottom. The engine-shaft has been sunk 1 fm. 3 ft. below this level, where the lode has been worth 10t. per fathom. We have stopped 3 fms. west of this sink; lode is also worth 10t. per fathom. This stoppage is suspended for the convenience of sinking the shaft, which we have set to six men, 3 fms. stent, at 23t. per fathom; lode worth 20t. per fathom; we have six men stopping the bottom of this level, east of shaft, at 5t. per fathom; lode worth 18t. per fathom; we have stopped 8 fms. The 170 has been driven west 11 fms., through a lode worth from 18t. to 20t. per fathom. The lode in the end is now worth 12t. per fathom, set to four men, at 60s. per fathom. No. 1 stope, in the back, is worth 12t. per fathom, set to four men, at 2½ per fathom. No. 2 is worth 6t. per fathom, set to two men, at 50s. per fathom. The stop in the back of this level, east of the shaft, is worth 8t. per fathom, set to three men, at 75s. per fathom; stopped in the whole of these stopes 58 fms.—Trevenen Whim-shaft: We have put in a new skip-road from surface to the 150 fm. level, cut a plat at this level, and sunk the shaft through to the 150 fm. level, and cut it down to its full size 6 fms. below the 150; here the lode has been worth 8t. per fathom. We expect to complete this shaft to the 130, and get the skip to draw from that level by Jan. 1, when we expect to set a stope in the back, lode worth 6t. per fathom, the end to drive west by two men, at 25s. per fathom; the lode is also worth 6t. per fathom, and the shaft to sink below by six men, at 7t. per fathom, lode worth 9t. per fathom. The 150 has been cleared and secured 13 fms. west of the above shaft, where the lode has yielded a little tin, but not enough to value, set to four men, at 30s. per fathom. The adit in Tremenheere sett has been cleared to the first shaft 70 fms. from its mouth, the shaft cleared up and secured to the back of the level; we expect to get to the end and commence driving in a few days' time. We have 30 tributaries, at an average tribute of 10s. in 1'. We are glad to find that the mine has steadily improved during the last six months, and that our expectations have been fully realized, and we believe the mine will still continue to improve. —JOHN MEDLIN, WILLIAM TIPPETT.

The CHAIRMAN, having moved the adoption of the report and accounts, congratulated his co-shareholders upon the improved position of their property, as well as upon the increasingly encouraging prospects which it presented; but, as Mr. Wescomb would gladly afford the meeting any information that might be desired, Mr. (the Chairman) would content himself by saying that the results already achieved were, for many reasons, satisfactory, not the least being the fact that they corroborated the opinion which from the commencement of the company had been entertained by the largest shareholders. He was glad to hear that the bottom of the mine was quite equal to what it had been represented to be, and he hoped, as that point had now been reached, that their future operations would open out an extensive and permanently-productive undertaking.

Mr. WESCOMB said that upon the present occasion he met the shareholders with no ordinary degree of pleasure, for, after the lapse of some years, the object for which the company was formed, and which ought to have been accomplished long since, had at length been attained; and at the bottom of the mine there had been found a tin lode, in every respect at least fully equal to what had been represented, which, he need hardly say, was a somewhat exceptional circumstance. As regarded the financial position of the company, he might, perhaps, mention that, in the statement of accounts just presented, showing a debit balance of 467. 18s. Id., there was included the October cost, which was not payable till Saturday, so that the accounts could not be brought up to 321. 15s., there was an actual balance against the company of only 14t., and, seeing that there had been called up the aggregate sum of 25,000t., he thought shareholders would agree with him that so small an amount of arrears was a result as unusual as it was satisfactory.

Mr. D'ANCY thought they might congratulate themselves upon the altered and satisfactory position which their property now occupied, and he hoped their future career would be accompanied with such a degree of success as would well repay them for their outlay and perseverance.

Mr. WESCOMB stated that the ground at the bottom of the mine was of that soft character that it could be quickly cut, at the same time, economically explored, inasmuch as timber was required. He might, in general terms, state that the whole of the ground, so far as had been seen, confirmed everything that had been said about it. There was no disguising the fact that a considerable amount of time had been lost in directing attention to the old "stulls," rather than the clearing of the mine to the bottom, and the developing of the property in a miner-like way.

Mr. PALMER enquired the reason that the levels to the westward had not been driven beyond a certain point?—Mr. WESCOMB replied that the only reason he could assign was that the point referred to was the boundary of the old company; but the present company's seat extended far beyond that point, and in which some of their riches had been found.

Mr. D'ANCY said the mine could be worked cheaply, comparatively speaking, by reason of the water being very easy, and that scarcely any timber was required.

Mr. WESCOMB, in answer to a question, said that he was not only glad to inform the shareholders that he did not require any call upon the present occasion, but that he hoped to be able soon to return to them some portion of the outlay they had incurred.

Mr. HAND enquired if the merchants sent in invoices with the supplies. The reason he had put that question was because at a late mine meeting, he had been informed by the Chairman that invoices were never sent in with the supplies, assigning as the reason that the prices of the different articles supplied were not known.

Mr. WESCOMB knew of no reason why the merchants should not send in their bills; at any rate, he (Mr. Wescomb) never transacted business with any merchant that objected to do so.

Mr. HAND was glad to hear Mr. Wescomb make that statement, because it altogether nullified that which he had been told at the late meeting, which, at the time, he thought the most extraordinary statement he had ever heard.

Mr. AVES quite endorsed the opinion of Mr. Hand, for when he (Mr. AVES) heard that statement made, he certainly thought it was a most disgraceful way of transacting business.

Mr. D'ANCY drew attention to the fact that there was a south lode, about 16 or 18 fms. from the new workings. It was true the lode was small, but it was very desirable to put out a cross-cut, to intersect the lode at a greater depth.

The CHAIRMAN said it was satisfactory to find that the present agents' promises were fulfilled, for in July last they estimated that in four months hence the mine would be paying its costs, which had been proved by facts. So many promises had been broken,

Mr. WESCOMB, in answer to a question, stated he could not promise that during the current three months the returns would more than pay the costs, for during that period they would erect 12 heads of stamps, the cost of which would be paid out of the returns.

With regard to Tremenheere, he believed that would prove to be as good a sett as Trevenen, without another shaft being sunk?—Mr. WESCOMB replied that he thought at least 100 fms. There was no question they had a great mine.

Mr. D'ANCY said they had yet much to see, for there were several lodes yet to be intersected.

The report was then received and adopted, and the accounts passed and allowed.

A resolution was passed requesting the purser to provide each shareholder with a

lithographic plan and section of the mine. A special vote of thanks was passed to Mr. WESCOMB for the able and indefatigable manner in which he continued to conduct the company's affairs.

The vote having been duly acknowledged, the proceedings terminated with the usual compliment to the Chairman.

GREAT WHEAL VOR UNITED MINING COMPANY.

The ordinary quarterly meeting of shareholders was held at the company's offices, Gresham House, on Wednesday,

Mr. GEORGE NOAKES (managing director) in the chair.

Mr. TRUMAN read the notice convening the meeting, and the minutes of last were confirmed. The accounts (an abstract of which appeared in last week's Journal, ending with the October costs, and showing a profit upon the quarter's operations of 516. 10s., were taken as read.

The CHAIRMAN said he would, in the first place, submit to the shareholders the report of the committee, which was as follows:—

Dec. 17.—The committee have the satisfaction to state that during the last three months great progress has been made in the development, and considerable improvements have taken place in the prospects of the mine. The important discoveries that have been laid open are of a nature to give permanency to the undertaking. Metal shaft has been sunk to nearly 9 fathoms below the 162, which, for the most part, has been productive. The committee trust that before the next general meeting new levels will be in course of drivage, to prove the ground below the 162. The committee, in their report to the meeting last September, referred to their disappointment in cutting the north lode in the 162, contrary to universal expectation. It is, therefore, with much interest that the committee look to the present favourable indications in the ends driving on the south lode in this level, such as lead to the daily expectation of cutting the ore ground east and west of Metal shaft, under the rich bunch gone down from the 152. There is also every indication that the north lode will be shortly cut on the north cross-cut, which is driving in the 162, to prove the north lode under the 152, west of Metal shaft. These ends are all promising, and yield tin. The development in the cross-cut, north, on the cross-course, in the 152, east of Metal shaft, has been characterized by a ramifications of lodes and cross-courses, which, though permeated in every direction by good stamping work, has, nevertheless, cut up the ground, and delayed the remunerative position which the committee had hoped by this time to have been established. The cross-cut, north, on the cross-course, in the 152, east of Metal shaft, after passing through two parallel lodes, 6 feet apart, is still driving north, with indications that the main lode may be yet north. The rise that is going up from this level carries the whole ground with the two lodes, 12 feet apart, and 15 feet wide, giving profitable stamping work. The adventures will perceive that the large space of ground now in separation from the 142 to the 162 fm. levels, promises to yield large returns. It is hoped, also, that a junction of these lodes will be found in depth. But irrespective of the rich deposits of tin east and west of Metal shaft, the committee regard the development of the ground west of Metal shaft as most important to the prospect of winning a lasting and profitable mine, as there is a course of more than 300 fms. of whole ground to explore. It is, therefore, with great satisfaction that the committee report that Ivey's shaft is now holed to the 152, and the drive west has already commenced in that level; and as soon as the lode is fixed and plat cut, the sinking of Ivey's shaft will be resumed. The rich lode discovered last August in the 100, west of Ivey's shaft, continues to hold on productive; and from indications the 115 fm. level end, which now produces good stones of tin, is expected to be found equally productive. Should this bunch hold down to the 132, of which there seems every probability, as there is now tin in the end, it will give a large depth of ground. Ivey's shaft, which has been sunk with so much speed during the year, will be continued down as quick as possible, with the hope of taking the course of ore at the next level, and all the levels west of it will be pushed on with vigour. Looking at the immense amount of tattow, and the large returns of tin that have been made since 1860, the committee feel that the encouraging reports which they have from time to time issued to the shareholders have, for the most part, been realized. The committee take this opportunity to testify their continued confidence in the mine, and to assure the shareholders that at no period have the discoveries which have taken place within the last few months given such prospects of permanency. The committee hope that the results of these discoveries will be favourably demonstrated at the next general meeting. The returns of tin have been favourably maintained, and it is hoped that they will be augmented in the coming quarter. The price of tin ore, which in Oct. rose to 74t. per ton, has unfortunately again receded, which has shortened our expected balance. Our finances, nevertheless, continue to be in a sound and healthy state.

The audited cash account to Oct. 31 last showed a balance in hand of £1763 19 6

Since which there has been received—Tin sale on the 13th inst. 2736 18 6

On call account 0 8 9

Sundries from the mines 4 11 6

Kent of Trellisick 12 12 0

Sale of plant 28 4 4

And paid— Total £4546 14 9

Oct. cost. (including merchants' bills) £1282 15 9

Sundries 5 17 9 = £1288 13 6

Balance (cash and bills) £3258 1 3

The actual account stands this day as follows—ASSETS—Balance as above £3258 1 3

Old materials unpaid 257 7 6

Arrears of call 7 4 = £3522 13 2

LIABILITIES—Nov. cost, including merchants' bills £1387 14 4

Sundries (say) 200 0 = 1587 14 4

Balance in favour this day £1934 18 10

The report of the agents was read, as follows:—

Dec. 14.—After having carefully examined the mines throughout, we send you the following report of our prospects, and the work now in progress:—In the 100, west of Ivey's shaft, the lode is from 2 to 3 ft. wide, composed of quartz, capel, and prian, and worth for tin 20t. per fathom. In the 115, west of Ivey's shaft, the lode is 3 ft. wide, composed of quartz, peach, prian, and mundic, worth for tin about 7t. per fathom; this lode looks very promising to improve shortly. Ivey's shaft is holed to the 132 fm. level end; the shaftmen are engaged in squaring the shaft, to bring down the steam-whim kibbles to take away the stuff from this level. We shall commence to sink below the 132 in the early part of next month; it is a very important thing to have this shaft holed for ventilation, as well as draining the water. In the 132, west of Ivey's shaft

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[DEC. 20, 1862.]

tin lode; in the last 6 ft. sunk the shaft passed through a soft floor of ground, and the lode has not been quite so rich for tin, but the floor is worn out, and the lode is now worth 100/- per fathom for the length of the shaft, which is 12 feet: this has been its average value since we first cut it. In the 140 west we have not laid open much ground on the tin lode, but what we can see is large, and of much the same character as Lyle's shaft, though not so rich, producing 44 lbs. of tin per ton of stuff, or 4 cwt. of tin per 100 sacks, which will pay well for working. This lode is distinct from Butler's lode, going west: from its bearing it must be the Highbrow lode in Carn Brea, which has been the most productive in that mine. We have a cross-cut in the 125, driving south about 10 fms., west of Lyle's shaft, to intersect the tin lode, and when cut, if found to be productive, as in the shaft and 140 west, it will lay open an immense quantity of tin ground. In three or four months we shall be able to decide on the propriety of having steam-stamps, and on the number of heads we can supply with stuff.—JOHN DAW.

The CHAIRMAN thought the shareholders would have but one opinion with regard to the report just read—that it was of a very encouraging character.

Mr. W. A. THOMAS said, that although the accounts just submitted showed a small loss upon the four months' operations, yet as there was timber uncut, it might be safely said that the mine during the period over which the accounts extended had paid its own costs.

Mr. E. COOKE considered that their property had now gained such a position as to justify them in confidently hoping that their returns would gradually improve. He had understood that the mine had recently been inspected for Mr. Lawrence; if so, he (Mr. Cooke) thought it would be satisfactory to the meeting to know the opinion given.

Mr. L. LAWINGTON stated that he had of late had the mine several times inspected by his own agent. The reports received stated that the lode in the shaft had been worth 100/- per fm. for 10 fms. sinking, and that it had been proved in the 140 fathom level for 27 fathoms in length. He (Mr. Lawington) had no doubt, when the next level was driven, that dividends would be paid out of profits derived from the tin alone. A point of considerable interest was the cross-cut in the 125, which was driving towards the lode, which had never yet been seen above the 140; this was a most important feature, as there seemed to be little doubt but that at this point a considerable quantity of ore ground would be laid open. Upon the whole, his agent considered Great South Toigus to be a first-class investment.

Mr. W. A. THOMAS, in answer to a question, said that, as had been seen by the report just read, their agent (Capt. Daw) thought that this new lode was the celebrated Highbrow lode, which, when first cut in Carn Brea, in the 90 fathom level, was not larger than a quill, but that same lode, it was well known, had proved rich for something like 200 fathoms deep.

Mr. E. COOKE enquired when it was expected the next level would be commenced?

Mr. W. A. THOMAS had no doubt Capt. Daw would make it a 12-fathom lift. The shaft was at present down 10 fathoms.

Mr. E. COOKE enquired what was the computed length of this lode in the set?

Mr. W. A. THOMAS replied that it ran through the entire length of the set towards the south, on account of Tehidy forming a sort of angle.

Mr. E. COOKE said that the shaft had been sunk through a course of ore for 10 fms. deep, of the value of 100/- per fathom, and that it had been proved for 27 fms. in the 140, it was, he thought, but a moderate calculation to estimate that the tin ground laid open was worth from 20,000/- to 30,000/-.

Mr. W. A. THOMAS thought it was quite possible the lode might not be so rich upwards, its character being to become richer in depth.

Mr. COOKE considered that it was satisfactory to find from sinking and driving alone they had been able to pay the whole of their cost, and at the same time lay open a great deal of tin ground.

Mr. W. A. THOMAS, in answer to a question, replied that there were now ready for sale about 100 tons of ore, and that there would be about the same quantity ready in about a fortnight. The tin was of a very excellent quality. He confidently hoped the mine would now continue to satisfactorily develop itself. In about four months Capt. Daw expected to be in a position to state whether or not it would be advisable to go to the example of erecting a stamp.

Mr. LAWINGTON said it was the opinion of his agent that, from the lasting appearances presented, the lode would continue to be of the same value for some considerable distance both in depth and length, in which case Great South Toigus would, in a short time, be one of the richest mines in Cornwall.

The accounts were then passed and allowed, and the report was received and adopted.

A vote of thanks to the Chairman terminated the proceedings.

AMMAN COAL COMPANY.

A general meeting of shareholders was held, by adjournment from Nov. 25, at the company's offices, on Tuesday,

Sir EDWIN PEARSON in the chair.

The proceedings of the previous meeting, and the report of the directors; with balance-sheet, having been read by Mr. McLEOD (the secretary), a discussion ensued relative to the progress and prospects of the undertaking, introductory to which the CHAIRMAN congratulated the meeting on the fact that the Nine-feet seam (as well as the Six-feet) had been successfully won, and that practical steps had been taken by the directors to increase the output of coal as rapidly as safety would admit, which announcement gave universal satisfaction.

On the motion of Mr. ARCHIBALD MIRKELLES, one of the largest shareholders in the company, seconded by Mr. CHIFFEREL, the report of the directors was received and adopted.

The CHAIRMAN then stated that himself, Mr. J. E. Panter, and Mr. Chas. Lean, now retired from the board by rotation, leaving their seats at the disposal of the shareholders.

Mr. GRO. OFFER having been unanimously called to the chair, the re-election of Sir Edwin Pearson was proposed by Mr. LEE STEVENS, seconded by Mr. A. MIRKELLES, and carried unanimously. A similar compliment was paid to Mr. J. E. Panter; but it was considered to be undesirable to fill up the other vacancy.

On the resumption of the chair by Sir Edwin Pearson, Mr. H. Fisher was re-elected auditor by the meeting, and the directors were requested to appoint another professional auditor as his colleague.

Upon the motion of the Rev. F. THOMASBURGH, thanks were voted to the Chairman and directors for their services on behalf of the company, and the meeting separated.

MINING PHOTOGRAPHS—No. V.

"PERSEVERANCE" and "SELF-CONFIDENCE" may be justly deemed the mainsprings of mining adventure: without these elementary principles the most lavish subscriptions would be futile, the richest mines inert, and the speculations ruinous. They are to a mine what the heart is to the body, the sun to the day, and the stars to the night; without them all would be blank. With them success, though it cannot always be commanded, is yet rendered next to a certainty. Without self-confidence no man is justified in attempting an outlay. Having once fixed that stirring virtue in his mind, "cursed is he who, having put his hand to the plough, looketh back," is the most applicable proverb we can recollect to express our sentiments. How many disastrous cases of mining speculation can we of ourselves recount, in which, from the lack of one or both of these principles, mining has been condemned wholesale as a ruinous, gambling, lying profession? "Aye, profession! and nothing but profession, without the shadow of a reality," methinks I hear some disappointed adventurer angrily assert, without thinking that he has most likely been the cause of many disasters, he wanting the principles above quoted. He most likely has never tasted the sweets of reality; and, having suffered disappointment in one case, his temper is ruffled, his ardour cooled, and his spirit depressed; whereas, had he the support of our text, he would as assuredly ultimately triumph. We are involuntarily led to this lengthened poem by a circumstance which lately came under our notice: for fear it might be deemed a puff, we shall omit names. To many of our readers the original of the photograph will be well known, and I doubt not recognised; at the same time, it bears so great a family likeness to the whole of the mining generation, that it may be taken as a picture of mining in general. That is not an isolated case will be accorded even by the most bitterly disappointed and savage speculator, when he grows out the expression before mentioned in his anger. Suffice it for us to say the good fortune has fallen on a man every way deserving, possessing, as he does, these virtues in an eminent degree.

Being in Ireland some five years since, inspecting mines, I was invited by the worthy to whom I refer to visit my mine. "I fear we are at the far end," quoth he. "I should like to have your opinion: our party have lost all confidence. We had a little ore shallow; we are now down to the 35 fm. level, and the mine is poor. Prettier indications you never saw, but our capital is exhausted." "Well, Captain," replied I, "the old tale; let us see it." On visiting the mine I found a very good plant of machinery, the whole surface arrangements well and carefully laid out, a burrow from the levels and shafts, and such a burrow! I exclaimed, "What! are the proprietors mad to suspend and ruin a mine in such a state and position as this? They ought to be hanged, drawn, and quartered. Why they are about to leave off just where they ought to begin? Do they expect to find bundles of ore amongst the fern roots, or do they expect the ore to raise and dress itself at word of command?" The appearances here indicate to me that you will have a deep and lasting mine." "That," replied he, "has always been my opinion; I am glad to have it confirmed by you." This visit tended, for the time, to restore confidence; the mine was not abandoned, but was gradually deepened; still the promising reward was not forthcoming. The old despondency once more became ascendant and overpowering. At length the ore was found in the 50; but, as it could not be raised *ad infinitum*, and converted into cash on the instant, so as to pay dividends, the discovery was deemed by the savage adventurers as less than nothing. "Better be kept in longing expectation of something worth while than reap an empty reality," was their cry; and "stop her, stop her," their command. The captain, having perseverance and confidence on his side, begged them to hold a little longer, to wait the event of the other 10 fms. The more violent insisted on not expending another farthing. The mine was on the eve of "knocking," when it was suggested by the agent, "Why not sell out part if not all your shares? But take my advice and hold." "Sell out! farce, nonsense; who will buy? Who will be mad enough to buy in a mine that has been fairly tried for seven years, and nearly ruined everybody? Nonsense; who will buy?" "I will," replied the captain. Business was transacted to mutual satisfaction. This effort for the time again procrastinated the mine's suspension; the works proceeded. As the mine got deeper the lode gradually improved, but not in the manner the impetuous shareholders required. One after the other they expressed their disappointment and disgust, abused the whole affair,

and all such in no measured terms. The captain, still relying on his principles, worked on, and on. In the 60 and 70 fm. levels he and those who abided by his advice and experience met their reward. In the bottom of the mine they have now the finest course of lead in Ireland, and the mine is valued at more than ten times the outlay. The value of the shares at present may be counted by pounds, instead of shillings as they were purchased from the malcontents, to their infinite chagrin and disappointment. The captain, as a matter of course, is by them branded as a scheming villain, who knew what was there, but kept it secret from them! He should not have allowed them to have disposed of their interest, particularly to himself. Those who stuck to him and his creed look on him as an oracle, and so do his fault-finders, if we could see their hearts.

Had this miner not been largely gifted with the noble qualities forming the subject of our paper, this source of wealth, of employment, of happiness, would probably have lain neglected for this generation at all events. Now, it is calculated to be a real blessing, not only to the proprietors, but to the whole neighbourhood. All the ground in the locality for miles has been secured for mining pursuits. The nonsense of the ore existing in shallow deposits only has been exploded by facts; and the once busy neighbourhood—for the ground has been worked in days long gone—will resume its ancient activity, to the comfort and well-being of hundreds, as well as to demonstrate Ireland's mineral resources.

In this instance, as in all others, the excitement caused by discovery is apt to outrun reason. However, the proprietary being limited to a small number of individuals, less of it has been felt, and the facts less known, than would have been the case had the mine been in the London market. Miners have been busy tracing off the lode into other sets. Operations have been commenced with surprising results, the which will ere long be made public by the sales of produce, the best test. All this great and good work and achievements have been brought about by the perseverance and self-confidence of one individual. Go on, worthy man, thus; may the same fortune attend you and all such! When such principles lead the way, Fortune will be sure to walk in the path. We have before said this is by no means an isolated case, nor is it so far as our subject is concerned; but it seldom happens they who deserve meet the reward, as in this instance.

Now for the converse or, rather, reverse of the picture. How many mines have been irretrievably ruined, not only the mine themselves, but the adventurers,—the whole locality condemned and tabooed; until, at a future period, some such able-minded personage takes the matter in hand? How many? Echo answers—How many? The Irish echo would—Hundreds upon hundreds. Within our ken during the last month we could name half-a-dozen most deserving properties suspended because pig-headed, stupid, vacillating, ignorant, greedy committees and adventurers expect the mines to produce shiploads of copper at the surface, that shall produce 20 per cent. for copper without dressing! One mine, producing over 1000 tons above the adit, is to be suspended: as the captain cannot find the lode in the 10 fm. level, after a few weeks' trial, the company will not risk the capital to sink the mine. In another, the mine is suspended to ascertain how its neighbour fares? Yes, so it is! I have actually been asked, in reference to a lead mine just opened from the surface, in which the men had been at work a fortnight—"How soon do you think they will ship a cargo of 30 tons of lead?" Hear that, O ye miners! and hear that, O ye captains and pursers! would your ears not tingle at the sounds?

As we do not believe in tales being useful without morals, we apply our idea of the benefit to be derived from what we have written—That perseverance and self-confidence are the dicta which should be the miner's encouragement, that they should not be cowed or disconcerted by the fears or threats of pompous, overbearing chairmen or committees, and foolish, silly, cow-hearted adventurers, provided their mines be in good situations, and present indications which they from analogy deem worthy a trial; not to despair if they cannot send off a cargo of 30 tons in the first fortnight's working, or if they do not cut the lode in the 10 fm. level, when carried off by a slide, after selling 1000 tons from above the adit.

And, adventurers, a word for you. Do not put your faith in committees who have no knowledge, and seek an abundance of opinions, having none of their own; but if you have a captain who has perseverance and confidence to purchase your refusal, and who imitates the worthy man who has been so truthfully represented, emulate the example of them who followed him, and you shall assuredly reap the reward always attendant on Perseverance and Confidence.

SOUTH AUSTRALIA.—Through an indirect channel advices have been received from Adelaide to Oct. 27. The latest intelligence is given in a circular of Messrs. Elder, Striling, and Co.:—"The official mail steamer from King George's Sound arrived here with the August mail on the 7th inst. This was the most rapid mail communication with England ever recorded, and the English news was usually telegraphed to the other colonies from Adelaide. The Peninsular and Oriental Company's steamer did not reach Melbourne till three days afterwards. Our latest English papers were only 42 days old on arrival, and by Red Sea telegrams we were in possession of English intelligence to Sept. 5—only 33 days old. Business continues extremely dull, nor is there any hope of early improvement. Mr. McKinlay, the explorer, has returned to Adelaide, and 10,000/- have been voted to him for his services. The Mounta Mine has declared a dividend amounting to 32,000/-, or 10/- per share. A second similar dividend, it is expected, will be declared in January. The Burra Mine has also paid another dividend of 5/- on the original 5/- shares, being the 50th dividend of 10/- per cent. that has now been paid out of that mine. The first works on a practical scale for reducing ores by Rodda's patent process have been completed at the New Cornwall Mine, and a company is in process of formation for erecting more extensive works at other mines. The weather has, on the whole, been favourable to the crops, but considerable loss by rust in the wheat is reported in some districts. The far north has been visited by copious rains, but they came unfortunately too late to benefit either the lambing or the wood-clip of the present year."

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